

IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

Claim 1: canceled

Claim 2 (withdrawn): A gene which encodes a protein (a) or (b) described below; (a) a protein comprising an amino acid sequence represented by Seq. ID No. 2, (b) a protein comprising an amino acid sequence where one or a few amino acids are deficient, substituted or added in the amino acid sequence represented by Seq. ID No.2, and having high-affinity choline transporter activity.

Claim 3 (withdrawn): DNA containing a base sequence represented by Seq. ID No. 1 or its complementary sequence and a part or a whole of these sequences.

Claim 4 (withdrawn): DNA derived from a nematode which hybridizes with DNA comprising a gene according to claim 3 under a stringent condition, and encodes a protein having high-affinity choline transporter activity.

Claim 5 (withdrawn): A gene which encodes a protein (a) or (b) described below; (a) a protein comprising an amino acid sequence represented by Seq. ID No. 4, (b) a protein comprising an amino acid sequence where one or a few amino acids are deficient, substituted or added in the amino acid sequence represented by Seq. ID No.4, and having high-affinity choline transporter activity.

Claim 6 (withdrawn): DNA containing a base sequence represented by Seq. ID No. 3 or its complementary sequence and a part or a whole of these sequences.

Claim 7 (withdrawn): DNA derived from a rat which hybridizes with DNA comprising a gene according to claim 6 under a stringent condition, and encodes a protein having high-affinity choline transporter activity.

Claim 8: canceled

Claim 9: canceled

Claim 10: canceled

Claim 11 (withdrawn): A gene which encodes a protein (a) or (b) described below; (a) a protein comprising an amino acid sequence represented by Seq. ID No. 8,
(b) a protein comprising an amino acid sequence where one or a few amino acids are deficient, substituted or added in the amino acid sequence represented by Seq. ID No.8, and having high-affinity choline transporter activity.

Claim 12 (withdrawn): DNA containing a base sequence represented by Seq. ID No. 7 or its complementary sequence and a part or a whole of these sequences.

Claim 13 (withdrawn): DNA derived from a mouse which hybridizes with DNA comprising a gene according to claim 12 under a stringent condition, and encodes a protein having high-affinity choline transporter activity.

Claim 14: canceled

Claim 15 (withdrawn): A protein comprising an amino acid sequence represented by Seq. ID No. 2.

Claim 16 (withdrawn): A protein comprising an amino acid sequence where one or a few amino acids are deficient, substituted or added in the amino acid sequence represented by Seq. ID No. 2, and having nematode high-affinity choline transporter activity.

Claim 17 (withdrawn): A protein comprising an amino acid sequence represented by Seq. ID No. 4.

Claim 18 (withdrawn): A protein comprising an amino acid sequence where one or a few

amino acids are deficient, substituted or added in the amino acid sequence represented by Seq. ID No. 4, and having rat high-affinity choline transporter activity.

Claim 19: canceled

Claim 20: canceled

Claim 21 (withdrawn): A protein comprising an amino acid sequence represented by Seq. ID No. 8.

Claim 22 (withdrawn). A protein comprising an amino acid sequence where one or a few amino acids are deficient, substituted or added in the amino acid sequence represented by Seq. ID No. 8, and having mouse high-affinity choline transporter activity.

Claim 23 (withdrawn): A fusion protein being constructed by expressing a cDNA encoding fusion proteins of a protein having high-affinity choline transporter activity and a marker protein and/or a peptide tag.

Claim 24 (withdrawn): A fusion protein being constructed by expressing a cDNA encoding fusion proteins of a protein having high-affinity choline transporter activity and a marker protein and/or a peptide tag, wherein the protein having high-affinity choline transporter activity has nematode high-affinity choline transporter activity according to claim 16.

Claim 25 (withdrawn): A fusion protein being constructed by expressing a cDNA encoding fusion proteins of a protein having high-affinity choline transporter activity and a marker protein and/or a peptide tag, wherein the protein having high-affinity choline transporter activity has rat high-affinity choline transporter activity according to claim 18.

Claim 26: canceled

Claim 27 (withdrawn): Amended) A fusion protein being constructed by expressing a

cDNA encoding fusion proteins of a protein having high-affinity choline transporter activity and a marker protein and/or a peptide tag, wherein the protein having high-affinity choline transporter activity has mouse high-affinity choline transporter activity according to claim 22.

Claim 28 (withdrawn): An antibody which specifically binds to a protein having high-affinity choline transporter activity.

Claim 29 (withdrawn): An antibody which specifically binds to a protein having high-affinity choline transporter activity, wherein the protein having high-affinity choline transporter activity has nematode high-affinity choline transporter activity according to claim 16.

Claim 30 (withdrawn): An antibody which specifically binds to a protein having high-affinity choline transporter activity, wherein the protein having high-affinity choline transporter activity has rat high-affinity choline transporter activity according to claim 18.

Claim 31 (withdrawn): An antibody which specifically binds to a protein having high-affinity choline transporter activity, wherein the protein having high-affinity choline transporter activity has human high-affinity choline transporter activity according to claim 20.

Claim 32 (withdrawn): An antibody which specifically binds to a protein having high-affinity choline transporter activity, wherein the protein having high-affinity choline transporter activity has mouse high-affinity choline transporter activity according to claim 22.

Claim 33 (withdrawn): The antibody according to claim 28, wherein the antibody is a monoclonal antibody.

Claim 34: canceled

Claim 35 (withdrawn): A host cell containing an expression system which can express a protein having high-affinity choline transporter activity, wherein the protein having high-affinity choline transporter activity has nematode high-affinity choline transporter activity according to claim 16.

Claim 36 (withdrawn): A host cell containing an expression system which can express a protein having high-affinity choline transporter activity, wherein the protein having high-affinity choline transporter activity has rat high-affinity choline transporter activity according to claim 18.

Claim 37: canceled

Claim 38 (withdrawn): A host cell containing an expression system which can express a protein having high-affinity choline transporter activity, wherein the protein having high-affinity choline transporter activity has mouse high-affinity choline transporter activity according to claim 22.

Claim 39 (withdrawn): A non-human animal whose function of a gene which encodes a protein having high-affinity choline transporter activity is deficient or overexpresses on its chromosome.

Claim 40 (withdrawn): A non-human animal whose function of a gene which encodes a protein having high-affinity choline transporter activity is deficient or overexpresses on its chromosome, wherein the protein having high-affinity choline transporter activity has nematode high-affinity choline transporter activity according to claim 16.

Claim 41 (withdrawn): A non-human animal whose function of a gene which encodes a protein having high-affinity choline transporter activity is deficient or overexpresses on its chromosome, wherein the protein having high-affinity choline transporter activity has rat high-affinity choline transporter activity according to claim 18.

Claim 42 (withdrawn): A non-human animal whose function of a gene which encodes a protein having high-affinity choline transporter activity is deficient or overexpresses on its chromosome, wherein the protein having high-affinity choline transporter activity has human high-affinity choline transporter activity according to claim 20.

Claim 43 (withdrawn): A non-human animal whose function of a gene which encodes a protein having high-affinity choline transporter activity is deficient or overexpresses on its chromosome, wherein the protein having high-affinity choline transporter activity has mouse high-affinity choline transporter activity according to claim 22.

Claim 44 (withdrawn): The non-human animal according to claim 39, wherein the non-human animal is a mouse or a rat.

Claim 45 (withdrawn): A preparing method of a cell having high-affinity choline transporter activity characterized in introducing the gene according to claim 8 into a cell whose function of a gene which encodes a protein having high-affinity choline transporter activity is deficient on its chromosome.

Claim 46 (withdrawn): A preparing method of a cell having high-affinity choline transporter activity characterized in introducing the gene according to claim 8 into a cell whose function of a gene which encodes a protein having high-affinity choline transporter activity is deficient on its chromosome, wherein the cell having high-affinity choline transporter activity is integrated with the gene in its chromosome, and stably shows high-affinity choline transporter activity.

Claim 47 (withdrawn): A cell having high-affinity choline transporter activity being obtainable by the preparing method of a cell having high-affinity choline transporter activity according to claim 45.

Claim 48 (withdrawn): A screening method of a promoter or a suppressor of high-affinity choline transporter activity characterized in measuring/evaluating high-affinity choline transporter activity of the protein having high-affinity choline transporter activity according to claim 14 in the presence of a subject material.

Claim 49 (withdrawn): A screening method of a promoter or a suppressor of high-affinity choline transporter activity, or of high-affinity choline transporter expression characterized in comprising the steps of: a cell membrane or a cell which expresses a protein having high-affinity choline transporter activity is cultivated in vitro in the presence of a subject material; the activity and/or the expression amount of a protein having high-affinity choline transporter activity in the cell membrane or the cell is measured/evaluated.

Claim 50 (withdrawn): A screening method of a promoter or a suppressor of high-affinity choline transporter activity, or of high-affinity choline transporter expression characterized in comprising the steps of: a cell membrane or a cell which expresses a protein having high-affinity choline transporter activity is cultivated in vitro in the presence of a subject material; the activity and/or the expression amount of a protein having high-affinity choline transporter activity in the cell membrane or the cell is measured/evaluated, wherein the cell membrane or the cell which expresses a protein having high-affinity choline transporter activity is the host cell containing an expression system which can express a protein having high-affinity choline transporter activity according to claim 34.

Claim 51 (withdrawn): The screening method of a promoter or a suppressor of high-affinity choline transporter activity, or of high-affinity choline transporter expression according to claim 48, wherein the protein having high-affinity choline transporter activity is a recombinant protein.

Claim 52 (withdrawn): A screening method of a promoter or a suppressor of high-affinity choline transporter activity, or of high-affinity choline transporter expression

characterized in comprising the steps of: a cell obtained from the non-human animal according to claim 39 is cultivated in vitro in the presence of a subject material; the activity and/or the expression amount of a protein having high-affinity choline transporter activity in the cell is measured/evaluated.

Claim 53 (withdrawn): A screening method of a promoter or a suppressor of high-affinity choline transporter activity, or of high-affinity choline transporter expression characterized in administering a subject material to a non-human animal and then evaluating the activity and/or the expression amount of a protein having high-affinity choline transporter activity.

Claim 54 (withdrawn): A screening method of a promoter or a suppressor of high-affinity choline transporter activity, or of high-affinity choline transporter expression characterized in administering a subject material to a non-human animal whose function of a gene encoding a protein having high-affinity choline transporter activity is deficient or overexpresses on its chromosome, and then evaluating the activity and/or the expression amount of a protein having high-affinity choline transporter activity.

Claim 55 (withdrawn): A screening method of a promoter or a suppressor of high-affinity choline transporter activity, or of high-affinity choline transporter expression characterized in administering a subject material to a non-human animal whose function of a gene encoding a protein having high-affinity choline transporter activity is deficient or overexpresses on its chromosome, and then evaluating the activity and/or the expression amount of a protein having high-affinity choline transporter activity in comparison with the case using wild-type non-human animal.

Claim 56 (withdrawn): The screening method of a promoter or a suppressor of high-affinity choline transporter activity, or of high-affinity choline transporter expression according to claim 52, wherein the non-human animal is a mouse or a rat.

Claim 57 (withdrawn): A material which promotes activity or expression of a protein

having high-affinity choline transporter activity being obtainable by the screening method according to claim 48.

Claim 58 (withdrawn): A material which suppresses activity or expression of a protein having high-affinity choline transporter activity being obtainable by the screening method according to claim 48.

Claim 59 (withdrawn): A medical constituent characterized in being used for a medical treatment for a patient who needs elevation of the activity or enhancement of the expression of a high-affinity choline transporter, and containing the protein according to claim 14.

Claim 60 (withdrawn): A medical constituent characterized in being used for medical treatment for a patient who needs suppression of the activity or the expression of a high-affinity choline transporter, and containing the protein according to claim 14.

Claim 61 (withdrawn): A diagnostic method for diseases relating to the expression or the activity of a high-affinity choline transporter characterized in comparing a DNA sequence encoding a high-affinity choline transporter in a sample to a DNA sequence encoding the protein according to claim 19.

Claim 62 (withdrawn): A diagnostic probe for Alzheimer's disease comprising a whole or a part of an antisense strand of DNA or RNA encoding the protein according to claim 19.

Claim 63 (withdrawn): A diagnostic drug for Alzheimer's disease characterized in containing the diagnostic probe according to claim 62.

Claim 64: canceled

Claim 65: canceled

Claim 66 (withdrawn): A cell having high-affinity choline transporter activity being

obtainable by the preparing method of a cell having high-affinity choline transporter activity according to claim 46.

Claim 67: canceled

Claim 68 (withdrawn): A screening method of a promoter or a suppressor of high-affinity choline transporter activity, or of high-affinity choline transporter expression characterized in comprising the steps of: a cell membrane or a cell which expresses a protein having high-affinity choline transporter activity is cultivated in vitro in the presence of a subject material; the activity and/or the expression amount of a protein having high-affinity choline transporter activity in the cell membrane or the cell is measured/evaluated, wherein the cell membrane or the cell which expresses a protein having high-affinity choline transporter activity is the cell having high-affinity choline transporter activity according to claim 47.

Claim 69 (withdrawn): A screening method of a promoter or a suppressor of high-affinity choline transporter activity, or of high-affinity choline transporter expression characterized in comprising the steps of: a cell membrane or a cell which expresses a protein having high-affinity choline transporter activity is cultivated in vitro in the presence of a subject material; the activity and/or the expression amount of a protein having high-affinity choline transporter activity in the cell membrane or the cell is measured/evaluated, wherein the cell membrane or the cell which expresses a protein having high-affinity choline transporter activity is the cell having high-affinity choline transporter activity according to claim 64.

Claim 70 (withdrawn): The screening method of a promoter or a suppressor of high-affinity choline transporter activity, or of high-affinity choline transporter expression according to claim 49, wherein the protein having high-affinity choline transporter activity is a recombinant protein.

Claim 71 (withdrawn): The screening method of a promoter or a suppressor of high-

affinity choline transporter activity, or of high-affinity choline transporter expression according to claim 53, wherein the non-human animal is a mouse or a rat.

Claim 72 (withdrawn): The screening method of a promoter or a suppressor of high-affinity choline transporter activity, or of high-affinity choline transporter expression according to claim 54, wherein the non-human animal is a mouse or a rat.

Claim 73 (withdrawn): The screening method of a promoter or a suppressor of high-affinity choline transporter activity, or of high-affinity choline transporter expression according to claim 55, wherein the non-human animal is a mouse or a rat.

Claim 74 (withdrawn): A material which promotes activity or expression of a protein having high-affinity choline transporter activity being obtainable by the screening method according to claim 49.

Claim 75 (withdrawn): A material which promotes activity or expression of a protein having high-affinity choline transporter activity being obtainable by the screening method according to claim 52.

Claim 76 (withdrawn): A material which promotes activity or expression of a protein having high-affinity choline transporter activity being obtainable by the screening method according to claim 53.

Claim 77 (withdrawn): A material which promotes activity or expression of a protein having high-affinity choline transporter activity being obtainable by the screening method according to claim 54.

Claim 78 (withdrawn): A material which promotes activity or expression of a protein having high-affinity choline transporter activity being obtainable by the screening method according to claim 55.

Claim 79 (withdrawn): A material which suppresses activity or expression of a protein having high-affinity choline transporter activity being obtainable by the screening method according to claim 49.

Claim 80 (withdrawn): A material which suppresses activity or expression of a protein having high-affinity choline transporter activity being obtainable by the screening method according to claim 52.

Claim 81 (withdrawn): A material which suppresses activity or expression of a protein having high-affinity choline transporter activity being obtainable by the screening method according to claim 53.

Claim 82 (withdrawn): A material which suppresses activity or expression of a protein having high-affinity choline transporter activity being obtainable by the screening method according to claim 54.

Claim 83 (withdrawn): A material which suppresses activity or expression of a protein having high-affinity choline transporter activity being obtainable by the screening method according to claim 55.

Claim 84 (withdrawn): A medical constituent characterized in being used for a medical treatment for a patient who needs elevation of the activity or enhancement of the expression of a high-affinity choline transporter, and containing the material which promotes activity or expression of a protein having high-affinity choline transporter activity according to claim 57 as an active component.

Claim 85 (withdrawn): A medical constituent characterized in being used for a medical treatment for a patient who needs elevation of the activity or enhancement of the expression of a high-affinity choline transporter, and containing the material which

promotes activity or expression of a protein having high-affinity choline transporter activity according to claim 74 as an active component.

Claim 86 (withdrawn): A medical constituent characterized in being used for a medical treatment for a patient who needs elevation of the activity or enhancement of the expression of a high-affinity choline transporter, and containing the material which promotes activity or expression of a protein having high-affinity choline transporter activity according to claim 75 as an active component.

Claim 87 (withdrawn): A medical constituent characterized in being used for a medical treatment for a patient who needs elevation of the activity or enhancement of the expression of a high-affinity choline transporter, and containing the material which promotes activity or expression of a protein having high-affinity choline transporter activity according to claim 76 as an active component.

Claim 88 (withdrawn): A medical constituent characterized in being used for a medical treatment for a patient who needs elevation of the activity or enhancement of the expression of a high-affinity choline transporter, and containing the material which promotes activity or expression of a protein having high-affinity choline transporter activity according to claim 77 as an active component.

Claim 89 (withdrawn): A medical constituent characterized in being used for a medical treatment for a patient who needs elevation of the activity or enhancement of the expression of a high-affinity choline transporter, and containing the material which promotes activity or expression of a protein having high-affinity choline transporter activity according to claim 78 as an active component.

Claim 90 (withdrawn): A medical constituent characterized in being used for medical treatment for a patient who needs suppression of the activity or the expression of a high-affinity choline transporter, and containing the material which suppresses the activity or

the expression of a protein having high-affinity choline transporter activity according to claim 58 as an active component.

Claim 91 (withdrawn): A medical constituent characterized in being used for medical treatment for a patient who needs suppression of the activity or the expression of a high-affinity choline transporter, and containing the material which suppresses the activity or the expression of a protein having high-affinity choline transporter activity according to claim 79 as an active component.

Claim 92 (withdrawn): A medical constituent characterized in being used for medical treatment for a patient who needs suppression of the activity or the expression of a high-affinity choline transporter, and containing the material which suppresses the activity or the expression of a protein having high-affinity choline transporter activity according to claim 80 as an active component.

Claim 93 (withdrawn): A medical constituent characterized in being used for medical treatment for a patient who needs suppression of the activity or the expression of a high-affinity choline transporter, and containing the material which suppresses the activity or the expression of a protein having high-affinity choline transporter activity according to claim 81 as an active component.

Claim 94 (withdrawn): A medical constituent characterized in being used for medical treatment for a patient who needs suppression of the activity or the expression of a high-affinity choline transporter, and containing the material which suppresses the activity or the expression of a protein having high-affinity choline transporter activity according to claim 82 as an active component.

Claim 95 (withdrawn): A medical constituent characterized in being used for medical treatment for a patient who needs suppression of the activity or the expression of a high-affinity choline transporter, and containing the material which suppresses the activity or

the expression of a protein having high-affinity choline transporter activity according to claim 83 as an active component.

Claim 96 (withdrawn): A diagnostic method for diseases relating to the expression or the activity of a high-affinity choline transporter characterized in comparing a DNA sequence encoding a high-affinity choline transporter in a sample to a DNA sequence encoding the protein according to claim 20.

Claim 97 (withdrawn): A diagnostic probe for Alzheimer's disease comprising a whole or a part of an antisense strand of DNA or RNA encoding the protein according to claim 20.

Claim 98 (withdrawn): A diagnostic drug for Alzheimer's disease characterized in containing the antibody according to claim 28.

Claim 99 (new): An isolated human-derived gene expressed in a cholinergic neuron which encodes a protein having high-affinity choline transporter activity.

Claim 100 (new): An isolated gene which encodes a protein comprising an amino acid sequence represented by Seq. ID No. 6,

Claim 101 (new): An isolated gene which encodes a protein comprising an amino acid sequence where one or a few amino acids are deficient, substituted or added in the amino acid sequence represented by Seq. ID No.6, and having high-affinity choline transporter activity.

Claim 102 (new): Substantially Purified and human derived DNA comprising a base sequence represented by Seq. ID No. 5 or its complementary.

Claim 103 (new): Substantially Purified and human-derived DNA encoding a protein that hybridizes with DNA constituting the gene according to claim 102 under stringent conditions, and has high affinity choline transporter activity

Claim 104 (new): A human-derived recombinant protein expressed in a cholinergic neuron and having the activity of high-affinity choline transporter.

Claim 105 (new): A isolated protein comprising a base sequence represented by Seq. ID No. 6.

Claim 106 (new): A substantially-purified and human-derived protein comprising an amino acid sequence where one or a few amino acids are deficient, substituted or added in the amino acid sequence represented by Seq. ID No.6, and having human high-affinity choline transporter activity.

Claim 107 (new): A fusion protein constructed by making cDNA encoding a fusion protein wherein the protein having high-affinity choline transporter activity has an activity of human-derived high-affinity choline transporter according to claims 105-106, and the protein having an activity of choline transporter and a marker protein and/or peptide tag are bound,

Claim 108 (new): A host cell containing an expression system which can express a human-derived protein expressed in a cholinergic neuron and having high-affinity choline transporter activity.

Claim 109 (new): The host cell according to claim 108, wherein the protein having high-affinity choline transporter activity has an activity of human-derived high-affinity choline transporter according to claim 105 or 106.

Claim 110 (new): A preparing method of a cell having an activity of human-derived high-affinity choline transporter characterized in introducing the gene or DNA according to claim 102 into a cell whose function of a gene which encodes a protein having high-affinity choline transporter activity is deficient on its chorosome.

Claim 111 (new): A preparing method of a cell having high-affinity choline transporter activity characterized in introducing the gene or DNA according to claim 102 into a cell whose function of a gene which encodes a protein having high-affinity choline transporter activity is deficient on its chromosome, wherein the cell having high-affinity choline transporter activity is integrated with the DNA in its chromosome, and stably shows high-affinity choline transporter activity.

Claim 112 (new): A cell having high-affinity choline transporter activity being obtainable by the preparing method of a cell having high-affinity choline transporter activity according to claim 111.